We claim:

1. A method for scheduling an access channel in a cellular telephony system, said system based on CDMA techniques wherein individual coding sequences are substantially orthogonal to one another and are respectively assigned to the mobile stations for spread-spectrum modulating a common carrier in uplink, and de-spreading demodulating the downlink carrier, in order to make them distinguishable at the air interface, the system adopting a two step procedure for managing the mobile stations' network access, comprising the steps of:

- selecting a signature burst from a plurality of orthogonal coding sequences;
- transmitting said signature burst from said mobile station to said network, said transmission occurring over a first configured physical channel;
- pausing for a select time interval;
- after said step of pausing, transmitting an acknowledgement message from said network to said mobile station, said message being transmitted over a second configured physical channel, said second channel being one of directly and indirectly correlated to said first channel;
- transmitting to said network from said mobile station an access request message on a third configured physical channel, said third configured channel being one of directly and indirectly correlated to at least one of said second and first channels;
- assigning a set of signatures and an acknowledgement message into a cell;
- calculating first time intervals at said mobile stations, said first time intervals indicative of when said signature bursts are transmitted;
- calculating second time intervals at said mobile stations, said second time intervals indicative of a wait for arrival of said acknowledgement message from said network; and
- minimizing collisions in said third configured physical channels between said access request messages sent from other mobiles stations via said first and second calculated time intervals depending on both a duration of said respective access request messages and delays in issuing said request messages.

2. The method according to claim 1, further comprising the steps of:

- broadcasting, by said network, system information in a broadcast channel said mobile stations, said system information comprising at least one part of a plurality of access parameters, said access parameters comprising values of said first time intervals for said mobile stations transmitting their signature bursts, values of said delays for issuing said access request messages, and durations of said access request messages;
- receiving said system information at said mobile stations; and
- decoding, at said mobile stations, access parameter values associated with said mobile stations.

3. The method according to claim 1, further comprising the steps of:

- assigning a carrier to said mobile stations;
- completing spread spectrum modulation at said mobile stations, and an opposite operation, into a fixed duration of a time slot inserted in a basic sub-frame indefinitely repeated into frames and multiframes having embedded physical channels for transporting logical channels deputed either to traffic or exchange signaling in a multilevel protocol conformed to a standardized operative mode;
- inserting synchronization bursts into pilot time slots,
- adopting a synchronization procedure of said mobile stations based upon said pilot time slots; and
- synchronizing said mobile stations such that respective signature bursts and positions of uplink pilot time slots carrying them, associations between signature bursts and position of said second configured physical channels carrying said acknowledge messages from said network, and wherein said association of a latter channel with position of said third physical channels for sending an access request messages having duration of a sub-frame or integer multiple are known to said mobile stations.

4. The method according to claim 2, further comprising the steps of:

- assigning a carrier to said mobile stations;

- completing spread spectrum modulation at said mobile stations, and an opposite operation, into a fixed duration of a time slot inserted in a basic sub-frame indefinitely repeated into frames and multiframes having embedded physical channels for transporting logical channels deputed either to traffic or exchange signaling in a multilevel protocol conformed to a standardized operative mode;
- inserting synchronization bursts into pilot time slots,
- adopting a synchronization procedure of said mobile stations based upon said pilot time slots; and
- synchronizing said mobile stations such that respective signature bursts and positions of uplink pilot time slots carrying them, associations between signature bursts and position of said second configured physical channels carrying said acknowledge messages from said network, and wherein said association of a latter channel with position of said third physical channels for sending an access request messages having duration of a sub-frame or integer multiple are known to said mobile stations.

5. The access channel scheduling method according to claim 3, further comprising the steps of
   - transmitting a new access message at each sub-frame mod N whereby values of access parameters satisfy equation [1] $\mathbf{L} \times \mathbf{WT} = \mathbf{M}$, wherein:
     - L comprises a number of sub-frames or a relative number of bits of an access message length,
     - WT comprises a maximum mobile station waiting time in terms of sub-frames for network acknowledgement at a sent signature,
     - M comprises a number of subframes between two successive signatures identifying a maximum frequency for sending a signature,
     - N comprises a value greater than 0, and
     - mod N comprises a time when a new access message may be transmitted for at a maximum frequency in number of sub-frames for starting a transmission of an access message after said signature acknowledgement,
   - determining if said network is able to acknowledge a detected signature,

- performing said step of transmitting a new access message within a subframe immediately after said detected signature, if said network is determined to be able to acknowledge said signature, and wherein
- a maximum waiting time WT is set within a following range of values according to equation [2] $\mathbf{0 < WT \leq integer\ [1/(L-1)] + 1 - (L - N) - (L - M)}$, such that if a negative or null value for the WT is obtained, the selected setting of at least one of said other parameters **L, N, M** is changed to allow network acknowledgement.

6. The access channel scheduling method according to claim 4, further comprising the steps of
   - transmitting a new access message at each sub-frame mod N whereby values of access parameters satisfy equation [1] $\mathbf{L \times WT = M}$, wherein:
     - L comprises a number of sub-frames or a relative number of bits of an access message length,
     - WT comprises a maximum mobile station waiting time in terms of sub-frames for network acknowledgement at a sent signature,
     - M comprises a number of subframes between two successive signatures identifying a maximum frequency for sending a signature,
     - N comprises a value greater than 0, and
     - mod N comprises a time when a new access message may be transmitted for at a maximum frequency in number of sub-frames for starting a transmission of an access message after said signature acknowledgement,
   - determining if said network is able to acknowledge a detected signature,
   - performing said step of transmitting a new access message within a subframe immediately after said detected signature, if said network is determined to be able to acknowledge said signature, and wherein
   - a maximum waiting time WT is set within a following range of values according to equation [2] $\mathbf{0 < WT \leq integer\ [1/(L-1)] + 1 - (L - N) - (L - M)}$, such that if a negative or null value for the WT is obtained, the selected setting of at least one of said other parameters **L, N, M** is changed to allow network acknowledgement.

7. The access channel scheduling method according to claim 5, further comprising the steps of:

- defining D as a number of sub-frames equal to a fixed delay by which said network acknowledges a detected signature;
- defining WTu as an updated waiting time WT;
- resolving relevant access parameters values by applying equations [1] and [2]
- executing equation [3] $WTu = WT + D - 1$;
- executing equation [4] $WTu \leq L$ so as to arrive at a true or false value;
- applying Wtu if equation [4] is true; and
- confirming WT if condition [4] is false.

8. The access channel scheduling method according to claim 6, further comprising the steps of:

- defining D as a number of sub-frames equal to a fixed delay by which said network acknowledges a detected signature;
- defining WTu as an updated waiting time WT;
- resolving relevant access parameters values by applying equations [1] and [2]
- executing equation [3] $WTu = WT + D - 1$;
- executing equation [4] $WTu \leq L$ so as to arrive at a true or false value;
- applying Wtu if equation [4] is true; and
- confirming WT if condition [4] is false.

9. The method according to claim 1, wherein:

- said network is able to support additional standardized operative modes for servicing a plurality of additional sets of mobile stations sharing subframes, frames and multiframes, after access has been completed;
- said network broadcasting system information is assigned at operative modes through logical channels; and
- each of said additional sets of mobile stations performs the step of selecting a proper channel for receiving its own system information and decoding access parameter values.

10. The method according to claim 2, wherein:
- said network is able to support additional standardized operative modes for servicing a plurality of additional sets of mobile stations sharing subframes, frames and multiframes, after access has been completed;
- said network broadcasting system information is assigned at operative modes through logical channels; and
- each of said additional sets performs the step of selecting a proper channel for receiving its own system information and decoding access parameter values.

11. The method according to claim 3, wherein:
- said network is able to support additional standardized operative modes for servicing a plurality of additional sets of mobile stations sharing subframes, frames and multiframes, after access has been completed;
- said network broadcasting system information is assigned at operative modes through logical channels; and
- each of said additional sets performs the step of selecting a proper channel for receiving its own system information and decoding access parameter values.

12. The method according to claim 5, wherein:
- said network is able to support additional standardized operative modes for servicing a plurality of additional sets of mobile stations sharing subframes, frames and multiframes, after access has been completed;
- said network broadcasting system information is assigned at operative modes through logical channels; and
- each of said additional sets performs the step of selecting a proper channel for receiving its own system information and decoding access parameter values.

13. The method according to claim 7, wherein:

- said network is able to support additional standardized operative modes for servicing a plurality of additional sets of mobile stations sharing subframes, frames and multiframes, after access has been completed;
- said network broadcasting system information is assigned at operative modes through logical channels; and
- each of said additional sets performs the step of selecting a proper channel for receiving its own system information and decoding access parameter values.

14. The method according to claim 9, wherein:

- said network is able to support additional standardized operative modes for servicing a plurality of additional sets of mobile stations sharing subframes, frames and multiframes, after access has been completed;
- said network broadcasting system information is assigned at operative modes through logical channels; and
- each of said additional sets performs the step of selecting a proper channel for receiving its own system information and decoding access parameter values.